ART. II.—MICROSCOPIC STUDIES ON THE CENTRAL NERVOUS SYSTEM OF REPTILES AND BATRACHIANS.

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ARTICLE II.—DIAMETERS OF THE NUCLEI OF NERVE CELLS IN THE SPINAL CORD. RANA; EMYS FLORIDANA; TESTUDO POLYPHEMUS.

AS early as 1875, while studying the histology of the frog's spinal cord, with special reference to the effect produced by poisons, I was often impressed by what appeared to be an inequality between the size of the nerve-cells in the brachial and those of the crural enlargement. This difference was most striking in longitudinal sections, where a long column of cells was under observation. They appeared to be larger in the crural than in the brachial region. The idea of ascertaining by actual measurement whether the inequality of size were real or apparent, was not then entertained, because it seemed to me that measurements of the body of the cell must be unsatisfactory, owing to the great and constant diversity in its form and in the number, size, and length of its prolongations or processes. Later I was led to measure the nuclei, and last winter published in the January number of this journal the fact that there is a considerable difference in the frog between the two enlargements of the spinal cord, as to the diameters of the cell-nuclei.

Neither Reissner, Stieda, nor any other anatomist, had, up to this time, given in their writings comparative measurements of nuclei taken from these two regions of the cord. Whatever shapes the cell-body may assume, or whatever may be the nature of its substance, the nucleus in these animals presents itself to us always as a sharply-defined, persistent anatomical element, easily prepared for microscopical examination. Readily colored by carmine, in both fresh and hardcounted, and the eye made familiar with their relative position in the field, in order to avoid measuring the same nucleus twice. The measurements as taken are noted down for this horn, and then the horn of the other side of the section is brought into the field, and so with each section on the slide.* The process is somewhat laborious, but by properly dividing the work it may be gone through with without much fatigue. After all the measurements that are desired are taken, they are added together and the sum is divided by the number of nuclei measured. This gives the average diameter.

EXAMPLE.

MEASUREMENTS OF NUCLEI FROM THE SPINAL CORD OF TESTUDO POLYPHEMUS NO. 1. MAY 15TH, 16TH AND 17TH, 1880.

No. of Nuclei.			Sum of Diameters.	Average Diameters.
224	Brachial	Long Diameters,	1544	6.89
		Short Diameters,	1319	5.87
220	Crural	Long Diameters,	1448	6.58
		Short Diameters,	1198	5.44

The above diameters are in divisions of the micrometer eye-piece with Nachet No. 5—7 divisions being equal to .0175 mm.

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* It is often possible to mount as many as twelve sections on the same slide.